

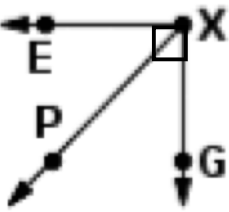
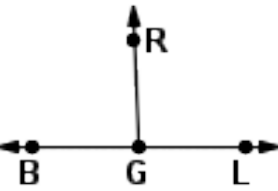
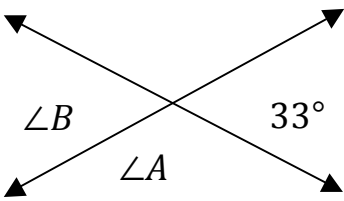
Unit 5: Angles

**Lesson #3:** Solve for complementary, supplementary, and vertical angle measures with algebra  
Complementary angles add up to \_\_\_\_\_ degrees.

Supplementary angles add up to \_\_\_\_\_ degrees

Vertical angles are \_\_\_\_\_, which means their angle measures are \_\_\_\_\_

**Example 1:** Calculating Missing Angle Measures in Complementary, Supplementary, and Vertical Pairs

Complementary (Diagram)	Supplementary (Diagram)	Vertical (Diagram)
<div></div> <p>Find the missing measure.</p> <p><math>m\angle GXP =</math> _____</p> <p><math>m\angle PXE = 47^\circ</math></p>	<div></div> <p>Find the missing measure.</p> <p><math>m\angle BGR =</math> _____</p> <p><math>m\angle LGR = 92^\circ</math></p>	<div></div> <p>Find the missing measure.</p> <p><math>m\angle A =</math> _____</p> <p><math>m\angle B =</math> _____</p>
Complementary (Verbal)	Supplementary (Verbal)	Vertical (Verbal)
If $\angle B$ is complementary to $\angle G$ and $m\angle B = 42^\circ$ , what is the measure of $\angle G$ ?	If $\angle JKL$ is supplementary to $\angle MNO$ and $m\angle MNO = 120^\circ$ , what is the measure of $\angle JKL$ ?	If $\angle JKL$ and $\angle MNO$ are vertical angles and $m\angle MNO = 40^\circ$ , what is the measure of $\angle JKL$ ?

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Unit 5: Angles**

**Lesson #3:** Solve for complementary, supplementary, and vertical angle measures with algebra

**Step 1**

Identify the angle relationship

**Step 2**

Set up the equation

**Step 3**

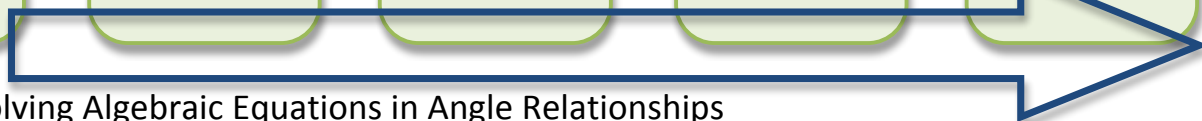
Solve for the variable.

**Step 4**

If necessary, substitute in for the variable and find the angle measure.

**Step 5**

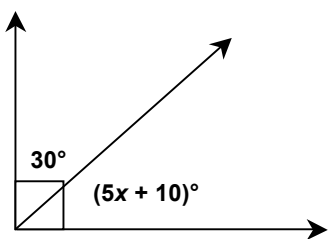
Remember your degrees and...  
**CHECK!**



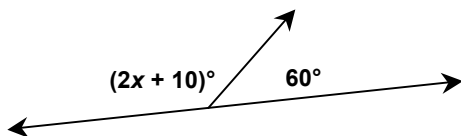
**Example 2:** Solving Algebraic Equations in Angle Relationships

**Directions:** Solve for  $x$ .

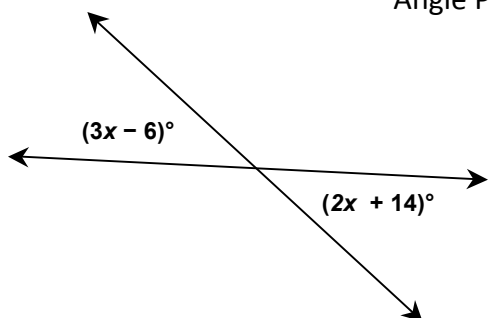
Angle Pair Relationship: \_\_\_\_\_



Angle Pair Relationship: \_\_\_\_\_



Angle Pair Relationship: \_\_\_\_\_



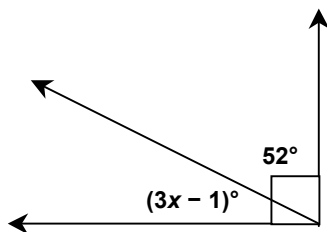
Name: \_\_\_\_\_

Date: \_\_\_\_\_

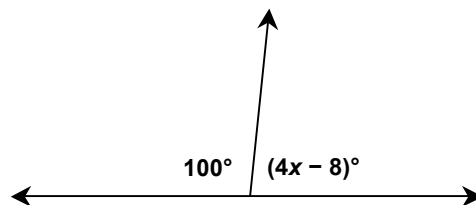
**Unit 5: Angles**

**Lesson #3:** Solve for complementary, supplementary, and vertical angle measures with algebra

**You Try 2!**



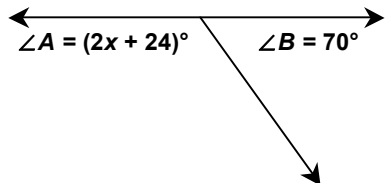
**Solution:** \_\_\_\_\_



**Solution:** \_\_\_\_\_

**Example 3:** Solving Algebraic Equations in Angle Relationships

**Directions:** Find the angle measure.



$m\angle A =$  \_\_\_\_\_

Name: \_\_\_\_\_

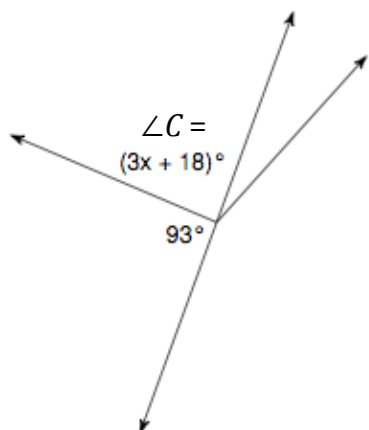
Date: \_\_\_\_\_

**Unit 5: Angles**

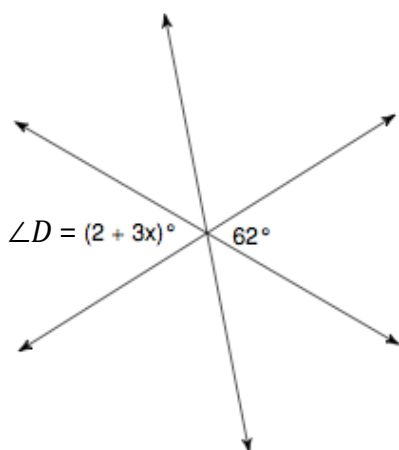
**Lesson #3:** Solve for complementary, supplementary, and vertical angle measures with algebra

**You Try 3!**

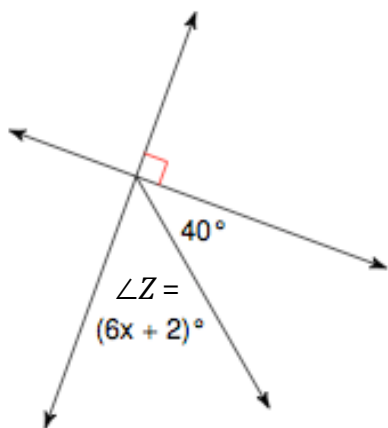
Solve for the missing angle measure.



$m\angle C =$  \_\_\_\_\_



$m\angle D =$  \_\_\_\_\_



$m\angle Z =$  \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

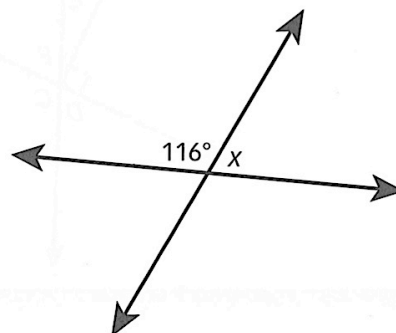
**Unit 5: Angles**

**Lesson #3:** Solve for complementary, supplementary, and vertical angle measures with algebra

**Independent Practice**

1. What is the measurement of angle  $x$  in the diagram below?

\_\_\_\_\_



2. Identify the relationship between angles 3 and 4.

\_\_\_\_\_

3. What is the measure of angle 5?

\_\_\_\_\_

4. What is the value of  $x$  if angle  $A = (4x + 2)^\circ$ ?

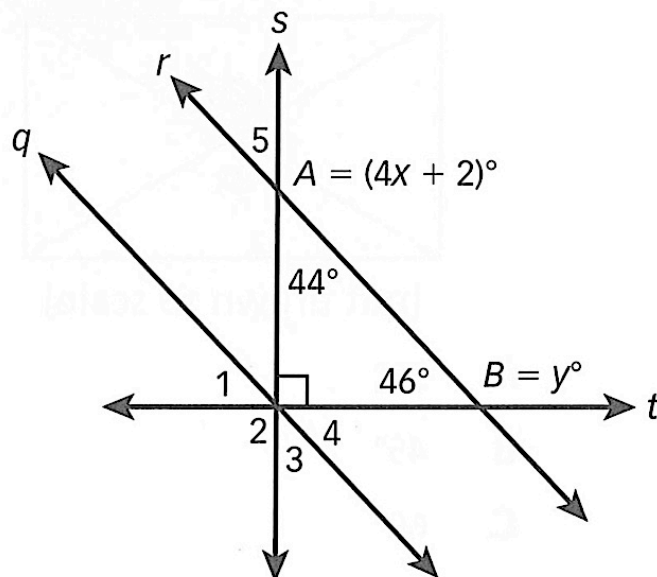
\_\_\_\_\_

5. What is the measure of angle  $A$ ?

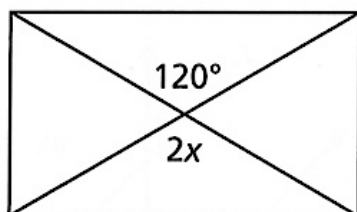
\_\_\_\_\_

6. What is the measure of angle  $B$ ?

\_\_\_\_\_



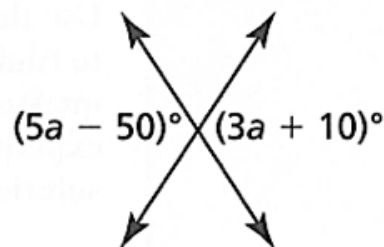
7. Kareem drew the rectangle below and its diagonals. What is the value of  $x$ ?



[not drawn to scale]

\_\_\_\_\_

8. Given the diagram below, what is the value of the quantity  $(3a + 10)$ ?



[not drawn to scale]

\_\_\_\_\_

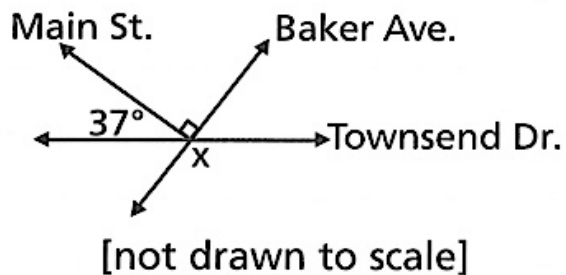
Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Unit 5: Angles**

**Lesson #3:** Solve for complementary, supplementary, and vertical angle measures with algebra

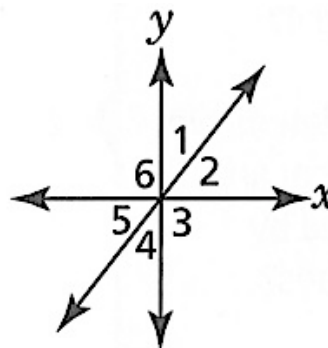
**9.** City planners are building new roads downtown. They need to make sure the angles at major intersections are not too sharp for turning. What they know is shown in the diagram.



What is the angle of the intersection of Baker Avenue and Townsend Drive, shown as  $x$  in the diagram?

\_\_\_\_\_

**10.** What is the relationship between angles 3 and 6 in the diagram below?



\_\_\_\_\_

**11.** If two vertical angles are complementary, what is the measure of each angle? Explain your answer.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_